I claim:

1. A cooking hob having a plurality of thermal cells distributed in matrix formation below a heat-resistant surface on which one or more cooking utensils can be located in random manner comprising means for determining the location, form and dimensions of the one or more cooking utensils positioned on the cooking hob including a signal source, means for processing a signal from the signal source individually through the plurality of thermal cells to determine which thermal cells lie under the one or more cooking utensils; and means for enabling those of the thermal cells lying below the one or more cooking utensils to be energized by a power source, wherein each thermal cell is able to be energized with a polarity opposite to the polarity of the current used to perform said determination, so that the power source and the signal source can be applied at the same time to different thermal cells.

2. The cooking hob according to claim 1, wherein the signal source is a radio frequency source with a direct current offset.

3. The cooking hob according to claim 1, wherein the cooking hob is duplicated rows/single-columns matrix in which each thermal cell lying on a row is connected by a first lead thereof to a respective row bar, the second lead of each thermal cell being connected to a first diode by anode and to a second diode by cathode, all first diodes connected to thermal cells lying on a column having the cathodes connected all together by means of a respective first column bar, all the second diodes connected to thermal cells lying on a column having anodes connected all together by means of a respective second column bar, each one of the

second column bars being electrically connectable to a reference voltage by closing solid state first switches, each one of the row bars being electrically brought connectable to a voltage negative compared to the reference voltage by closing second solid state switches, each of the row bars not connected through the first switches to a voltage negative compared to the reference being connectable to a voltage positive to the reference through third solid state switches, each of the columns bars being connectable to the reference voltage through fourth solid state switches.

4. The cooking hob according to claim 1, wherein the thermal cells of the row/column matrix which are connected to odd rows are connected to diodes at the anode, the thermal cells which are connected to even rows being connected to diodes at the cathode, the leads of diodes not connected to thermal cells being connected to column bars, each of the column bars being able to be brought at the voltage of a first of the two leads of a power a.c. source by closing a relative first solid state switch, each of the row bars being able to be brought at the voltage of the second of two leads of a power a.c. source by closing a relative second solid state switch, each of the row bars being also able to be connected to one lead of a d.c. offset radiofrequency source by means of third solid state switches, each of the column bars being also able to be connected to the other lead of the d.c. offset radiofrequency source by means of fourth solid state switches.

5. A method for determining the location of cooking utensils on a cooking hob comprising a plurality of thermal cells distributed in matrix formation below a heat-resistant surface on which the cooking utensil can be located in random manner, the method comprising the steps of: determining the location, form and dimensions of the cooking

utensil; enabling the thermal cells lying below the utensil to be energized by a power source, each thermal cell being individually used for the determination; and applying a power current source and a signal source at the same time to different thermal cells.

6. The method according to claim 5, wherein the signal source is a radio-frequency source.

7. The method according to claim 6, wherein the signal source has a superimposed d.c. offset with selectable polarity.

8. The method according to claims 7, wherein each thermal cell is energized with a polarity opposite to the polarity of the current used to perform the determination of the location of the cooking utensil.